

The following is submitted as an Abstract:

A method of influencing variations in composition of thin films is described. The elemental plasma field distribution in sputtering systems is manipulated by generating a nonuniform electric field along a surface of the substrate to alter the composition by differentially re-sputtering the target elements. The nonuniform electric field is used to modulate the kinetic energy of the ions generated in the plasma which strike the thin film's surface. By applying varying electric potentials at a plurality of points on a conductive surface of a substrate, the electric field across the surface of the substrate can be modulated in a variety of patterns. In the preferred embodiment a radial voltage gradient is applied to a conductive surface of a disk on which a magnetic thin film is being formed to radially modulate the platinum content of the magnetic film.